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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/164,504	09/30/1998	MICHAEL S. KAPPES	20944.4000	6738

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EXAMINER

NGUYEN, TOAN D

ART UNIT	PAPER NUMBER
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2665

DATE MAILED: 02/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/164,504

Applicant(s)

KAPPES, MICHAEL S.

Examiner

Toan D Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 6-8, 11-13 and 16-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Betts et al. (U.S. Patent 5,812,537).

For claims 1 and 6, Betts et al. disclose echo canceling method and apparatus for data over cellular comprising:

generating an analog output signal by said first transmitter for receipt by said second receiver (figure 3, col. 4 line 65 to col. 5 line 4);

sampling said analog output signal (col. 5 lines 5-8); and

performing echo cancellation based on said analog output signal, using an echo canceler having a transfer function that is based upon a transfer function of a line coupling between the first transmitter and a second receiver, wherein said echo cancellation cancels the echo signals conveyed by said echo channel (col. 5 lines 24-25).

For claims 7 and 8, Betts et al. disclose echo canceling method and apparatus for data over cellular comprising:

sampling an analog output signal provided by a local transmitter (col. 5 lines 5-8), said analog output signal including characteristics associated with a nonlinearity introduced by said local transmitter (col. 4 lines 20-24);

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converting said analog output signal into a corresponding digital signal (col. 5 lines 5-8);
and

producing a compensated digital signal for receipt by a local receiver, wherein said nonlinearity is substantially eliminated from the compensated digital signal, by using an echo canceler having a transfer function that is based upon a transfer function of a line coupling present in the digital communication system (col. 4 lines 20-31 and col. 5 lines 24-25).

For claims 11-13 and 16, Betts et al. disclose echo canceling method and apparatus for data over cellular comprising:

a transmitter for providing an analog output signal (figure 3, col. 4 line 65 to col. 5 line 4);

a receiver for receiving a compensated digital signal (figure 3, col. 4 line 65 to col. 5 line 4); and

an echo canceler having an input signal and an output signal, wherein said input signal is essentially the analog output signal, and said output signal is representative of the echo signal and the non-linearities present in said digital communication system, the echo canceler having a transfer function that is based upon a transfer function of a line coupling present in the digital communication system (col. 4 lines 20-31 and col. 5 lines 24-25); and

means for producing said compensated digital signal in response to the output signal of said echo canceler and a signal sent by a second communication device associated with said digital communication system (col. 4 lines 20-31 and col. 5 lines 24-25).

For claim 17, Betts et al. disclose echo canceling method and apparatus for data over cellular comprising:

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generating an analog output signal by said first transmitter for receipt by said second receiver (figure 3, col. 4 line 65 to col. 5 line 4);

sampling said analog output signal (col. 5 lines 5-8);

detecting a signal on an echo channel associated with an actual echo signal at said second device (col. 5 lines 24-42); and

performing echo cancellation based on said sampled analog output signal and said signal on said echo channel, by using an echo canceler having a transfer function that is based upon a transfer function of a line coupling between the first transmitter and a second receiver (col. 5 lines 24-25).

For claim 18, Betts et al. disclose echo canceling method and apparatus for data over cellular comprising:

sampling an analog output provided by a local transmitter (col. 5 lines 5-8), said analog output including a known training signal and characteristics associated with a nonlinearity introduced by said local transmitter (col. 4 lines 20-24);

calculating an estimated echo signal in response to said known training signal (figure 2, col. 3 lines 21-49 and col. 5 lines 29-38);

detecting a signal on an echo channel associated with an actual echo signal at a second device (col. 5 lines 24-42); and

producing a compensated digital signal for receipt by a local receiver, wherein said nonlinearity is substantially eliminated from the compensated digital signal on the basis of the estimated echo signal and said signal associated with said actual echo signal at said second device, by using an echo canceler having a transfer function that is based upon a transfer

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function of a line coupling between the first transmitter and a second receiver (col. 5 lines 22-42).

For claims 19-22, Betts et al. disclose echo canceling method and apparatus for data over cellular comprising:

a transmitter for providing an analog output signal (figure 3, col. 4 line 65 to col. 5 line 4);

a receiver for receiving a compensated digital signal (figure 3, col. 4 line 65 to col. 5 line 4);

an echo canceler having an input signal and an output signal, wherein said input signal is essentially the analog output signal, and said output signal is representative of the echo signal and the non-linearities present in said digital communication system, the echo canceler having a transfer function that is based upon a transfer function of a line coupling present in the digital communication system (col. 4 lines 20-31 and col. 5 lines 24-25);

an input associated, at least in part, with an actual echo signal at a second communication device (col. 5 lines 24-42); and

a summing junction operably coupled with the output signal of the echo canceller and further operably coupled with the input associated, at least in part, with said actual echo signal at said second communication device (figure 3, col. 5 lines 36-42).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-5, 9-10 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Betts et al. (U.S. Patent 5,812,537) in view of Agazzi et al. (U.S. Patent 4,669,116).

For claims 2-5, 9-10 and 14-15, Betts et al. do not disclose wherein said performing echo cancellation substantially reduces the effect, on signals received by said first receiver, of non-linearities present in said first transmitter. In an analogous art, Agazzi et al. disclose wherein said performing echo cancellation substantially reduces the effect, on signals received by said first receiver, of non-linearities present in said first transmitter (col. 12 lines 52-59). Agazzi et al. disclose further wherein said performing echo cancellation further comprises: converting said analog output signal into a corresponding digital signal, said digital signal corresponding to at least a part of the echo signals as well as the non-linearities present in said first transmitter (col. 4 lines 2-5); and subtracting the digital signal from signals received by said first device to produce a compensated digital signal (col. 3 line 68 to col. 4 line 2 as set forth in claim 3), wherein said performing echo cancellation further comprises training an echo canceler to account for at least a part of the echo signals imparted by said echo channel on signals received by said first receiver section 3.2, col. 11 line 13 to col. 12 line 59 as set forth in claim 4-5, 9-10 and 14-15).

One skilled in the art would have recognized performing echo cancellation substantially reduces the effect, on signals received by said first receiver, of non-linearities present in said first transmitter to use the teachings of Agazzi et al. in the system of Betts et al. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use the echo cancellation technique as taught by Agazzi et al. in Betts et al.'s with the motivation being to

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provide a linear canceller algorithm that can still be used in the face of a nonlinear channel and nonlinear canceller implementation (col. 12 lines 60-62).

Response to Arguments

5. Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toan D Nguyen whose telephone number is 703-305-0140. The examiner can normally be reached on Monday- Friday (7:00AM-4:30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Huy Vu can be reached on 703-308-6602. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

Toan D Nguyen

Toan D. Nguyen